

Claims:

Sub 1. A fluid flow control system for an electromagnetic pump comprising electromagnetic drive means within a compressor, the control system supplying a pulse width modulated drive signal to the electromagnetic drive means so as to supply a predetermined pump flow rate, the drive signal generated from a dc voltage supply.

10 2. A fluid flow control system as claimed in claim 1, wherein the pulse width modulated drive signal comprises a train of variable mark space ratio pulses with defined repetition rates and amplitude.

15 3. A fluid flow control system as claimed in claims 1 or 2, wherein the electromagnetic drive means includes stator(s) of magnetic material, excitation winding(s) for magnetically exciting the stator(s) and movable magnetic member connected to the actuator of the compressor.

20

4. A fluid flow control system as claimed in claim 3, wherein the electromagnetic drive means in combination with diaphragms provides a conversion of electrical energy to fluid flow.

25

5. A fluid flow control system as claimed in any preceding claim, wherein the pulse width modulated drive signal controls the instantaneous current within the excitation windings.

30

Sub. B3
6. A fluid flow control system as claimed in claim 5, wherein the mark-space ratio of the drive signal defines with time an approximate half sinewave current waveform.

5 7. A fluid flow control system as claimed in claim 6, wherein the pulse width modulated drive signal is of substantially constant amplitude.

Sub B2
8. A fluid flow control system for an electromagnetic
10 pump comprising electromagnetic drive means within a compressor, the control system supplying a pulse width modulated low voltage drive signal of substantially fixed amplitude to the electromagnetic drive means to control the amplitude and repetition rate of the current in the
15 coils of the electromagnetic drive means to drive the actuator in order to generate a desired flow rate output from the compressor.

9. A fluid flow control system for electromagnetic pump
20 comprising electromagnetic drive means within a compressor, the control system including a command generator creating a command signal corresponding to a predetermined desired fluid flow rate, sensor(s) to sense status of the system and provide feedback signal(s), the
25 command signal and feedback signal(s) being processed by a command processor, the command processor providing a drive signal output, the drive signal defined by mark-space ratio, repetition rate and amplitude and controlling the voltage to be applied to the compressor windings.

10. A fluid flow control system as claimed in claim 9, wherein the sensor(s) provides feedback of instantaneous coil current.

*Pub.
1/35*

11. A fluid flow control system as claimed in claim 9, wherein the sensor(s) provides feedback of actuator displacement.

12. A fluid flow control system as claimed in claim 9, wherein the sensor(s) provides feedback of bladder system pressure.

13. A fluid flow control system as claimed in claim 9, wherein the sensor(s) provides feedback of fluid flow into/out of bladder system.

14. A fluid flow control system substantially as hereinbefore described and with reference to the accompanying Figures 1 to 6.